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LOGY DEPARTMENT

Coal Age

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DETROIT

A MCGRAW-HILL PUBLICATION

OCTOBER, 1948



COAL AND DEFENSE . . p. 74



**JOB
PROVED**

UNDER PRESSURE 11 YEARS...STILL GOING STRONG

A Sun Oil Helps Keep Compressor on the Job 16 Hours a Day—No Hard Carbon Forms

The "lungs" of a forced ventilation system in a large industrial plant are two-stage air compressors—pumping air through the system at 300 pounds per square inch.

One of these compressors, now over 11 years old, has been running 16 hours a day since its installation. From the start, a Sun lubricant has been used to lubricate crosshead

and air cylinder. During the past five years there has been but one shutdown . . . and that occurred when a different brand of oil was used by mistake!

Operating on the Sun lubricant, the compressor is running as well today as ever. No hard carbon has formed. As a result of this record the plant has standardized on Sun

lubricants for all its air compressors and vacuum pumps.

This performance is typical of the advantages gained from "Job Proved" Sun lubricants in thousands of industrial plants. Further information can be had from any Sun Office. For a copy of the booklet "Lubrication of Air Compressors and Pneumatic Tools" write Department CA-10.

SUN OIL COMPANY • Philadelphia 3, Pa.

*In Canada: Sun Oil Company, Ltd.
Toronto and Montreal*

SUN PETROLEUM PRODUCTS

"JOB PROVED" IN EVERY INDUSTRY



Research keeps
B.F. Goodrich
FIRST IN RUBBER

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OCT 12 1948

DETROIT



Rocks on their way to being eyeglasses

A typical example of B.F. Goodrich product improvement

THOSE rocks, sometimes as big as a St. Bernard, will soon be crushed into sand, made into glass, polished into eyeglasses and telescope lenses. (The 200-inch reflector on Mt. Palomar began right here.)

All that takes a lot of handling. Ordinary conveyor belts were tried but the jarring shocks, the sharp rock edges, cut them to ribbons.

With problems such as this in mind, B.F. Goodrich developed a new type of conveyor belt, with a cord type of construction that "rolls with the

punch" of heavy impacts. But ordinary cords would not do for this job, where boulders slide onto the belt from a 10-ft. height. So BFG developed a belt using the cord principle but with *steel cords* bonded to rubber, for extraordinary strength yet flexible resistance.

This new B.F. Goodrich belt was installed and has already lasted 3 times as long as former belts and still shows no signs of wearing out. Plant costs have been reduced, continuous production assured, because B.F. Goodrich research had developed a product to

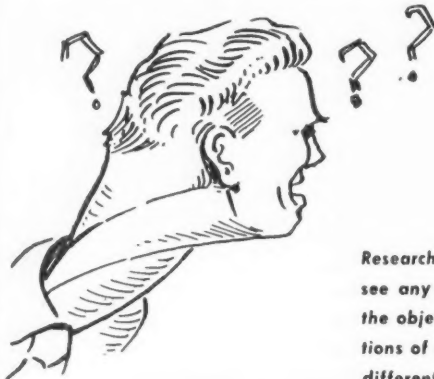
meet an especially tough problem. These results are occurring every day in thousands of plants for this same reason. Whether you use conveyor belting, transmission belting, hose of any kind, rolls, packing, lining or anything else of rubber, it will pay you well to find out the improvements in those products which B.F. Goodrich has made. Your B.F. Goodrich distributor can show them to you. *The B.F. Goodrich Company, Industrial Products Division, Akron, Ohio.*

B.F. Goodrich
RUBBER FOR INDUSTRY

Make no mistake

FOR
INSTANCE...

Are you mistaken about
SEEING?



Research proves that we never actually see any object—that is, we don't see the object itself! All we see are vibrations of light reflected from its surface, different vibrations giving different colors. Any object that absorbed all light and reflected none whatsoever would be colorless and invisible, even in broad daylight!

When you see "red ink" in the high operating and repair costs of your coal mining machinery — that's more than visual vibration, brother! All too frequently, it's the result of using the wrong kind of lubrication. If your object is to cure this trouble, just reflect on the fact that HULBURT QUALITY GREASE is the majority choice of really experienced coal operators. The visible results are coal mining machines that stay on the job, out of the repair shop . . . see what we mean?

HULBURT OIL & GREASE COMPANY—PHILADELPHIA, PENNA.

Specialists in Coal Mine Lubrication

for Coal Mine Lubrication

use



HULBURT

Quality **GREASE**

PROVEN BY PERFORMANCE

**TAKE THE
LOAD DOWN..**

**... WITH LESS
WEIGHT**



Many installations have proved the advantages of light-weight aluminum conductors when used in long-lived Hazard Borehole Cable.

HAZARD ALUMINUM BOREHOLE CABLE... is easier to handle ... quicker to install... permits deeper borehole suspensions without steel armor

HANGING a borehole cable is usually the shortest, most direct method to transmit electrical power to the lower mine levels — and it's not too difficult a job. The development of Hazard Submarine insulation eliminated in most cases the need for heavy, costly lead sheathing and permitted suspension in many cases merely by the conductors. Now, still another weight and cost reducing development is offered you with Hazard aluminum conductor borehole cable.

Since aluminum weighs only about one-third as much as copper, aluminum borehole cables are easier to handle, cut installation time. The light weight adds considerably to the length of borehole cables that can be installed without steel armor suspension.

The service record of aluminum conductors goes back nearly half a century. They have been used successfully for electrical transmission lines, power feeders, lighting circuits and underground installations. Hazard aluminum conductor borehole cables now in use prove the value of aluminum for use in the mining field.

With a little experience, you'll find aluminum conductors are as easy to work with as copper. Today more and more aluminum conductors are being used in all types of electrical service.

Get all the facts and information you want from your Hazard representative or write Hazard Insulated Wire Works, Division of The Okonite Company, Wilkes-Barre, Pa.

HAZARD

insulated wires and cables for every mining use

6242



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330 West 42nd St., New York 18, N. Y.

Please change the address of my COAL AGE subscription as follows:

Name.....
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Wickwire Rope is "Tissue Tested"

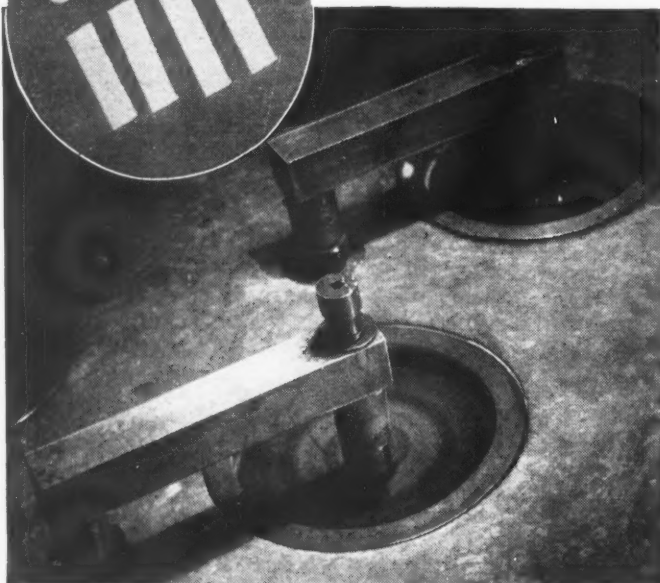
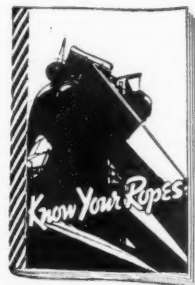
With the same scientific care a physician uses in examining human tissue, technicians in the Physical Testing Laboratory of Wickwire Spencer's Rope Mill test samples of wire imbedded in plastic "buttons." Samples from coils of wire are ground, polished, etched, microscopically examined and the findings recorded.

What's this got to do with wire rope? The grain size has an important bearing on the life span of the wire. Because the quality of the steel in the rope wire is just as important for dependable service as is the construction of the rope, Wickwire uses only such wire as passes the Physical Testing Laboratory's exacting standards.

For the utmost in performance, safety and long life, specify Wickwire Rope. It is available in all sizes and constructions, both regular lay and WISSCOLAY *Preformed*. Call on Wickwire distributors and Wire Rope engineers to help solve your wire rope problems and supply the right rope for your needs.

HOW TO PROLONG ROPE LIFE AND LESSEN ROPE COSTS

Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made work easier and rope last longer. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write, Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Massachusetts.



WICKWIRE ROPE

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

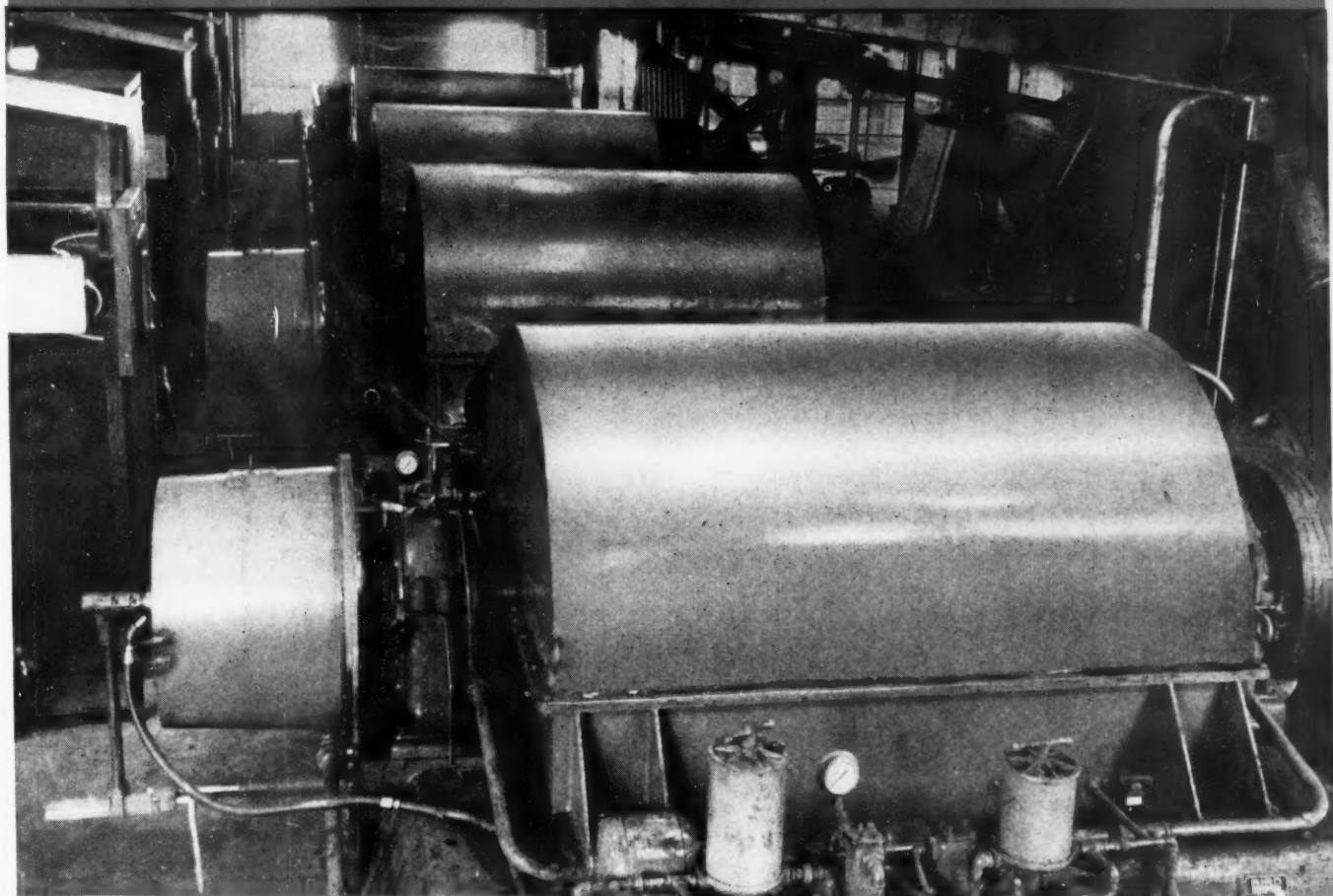
WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass.

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PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corporation, Oakland 6, California



A FINE WAY TO DRY FINE COAL



The Bird Continuous Centrifugal Filter has long since proved its ability to handle big tonnages of coal and other minerals even more abrasive than coal, and to do it without shutdowns and parts replacements.

It is now rapidly becoming the standard method of dewatering fine coal from tables, launders, jigs or sludge tanks following these or other pieces of cleaning equipment.

The Bird delivers the coal at low moisture content, on the average of from 6 to 10% depending on the size consist. The filter permits closed circuiting of the water system without adverse effect on cleaning efficiency.

Here is the finest, most dependable, most economical way to dry your fines. Ask us for detailed information.

BIRD MACHINE COMPANY
SOUTH WALPOLE, MASSACHUSETTS

THE BIRD

**CONTINUOUS
CENTRIFUGAL FILTER**

More Tonnage .



LOW-HEAD SCREENS

This is modernization that cuts coal preparation costs — two Allis-Chalmers "Low-Head" vibrating screens dewatering coal. Used with End-Tension Deck for dewatering small size coal and for screening and dewatering sludge in sizes as fine as 35 mesh. Side tension deck for wet screening and dewatering larger size coal. Sizes up to 6 x 16 ft. Bulletin 07B6330A.

ALLIS-CHALMERS

• SAVE MONEY TOO!

BEST BET for more *profitable* coal operations is *modern* equipment. Best results in coal are being obtained by producers who have installed tonnage-increasing, cost-cutting equipment of the type built by Allis-Chalmers.

The increasing use of Allis-Chalmers "Ripl-Flo" and "Low-Head" vibrating screens, for example, is resulting in speedier production . . . substantially lowered preparation costs . . . increased preparation plant recovery.

Stationary and portable mine unit substations . . . all-

electric hoists . . . long life motors and Texrope drives . . . distribution transformers — these, too, are Allis-Chalmers products that have won wide acceptance in coal.

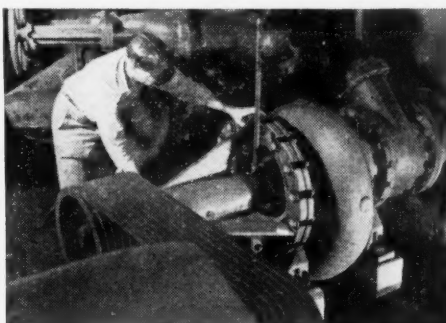
The development by Allis-Chalmers of centrifugal pumps for slurry handling, gathering and recirculation has been a big factor in lowering coal pumping costs.

There is an A-C representative near you who can tell you more about Allis-Chalmers' line of equipment for coal. Call him today. ALLIS-CHALMERS, MILWAUKEE 1, WIS.

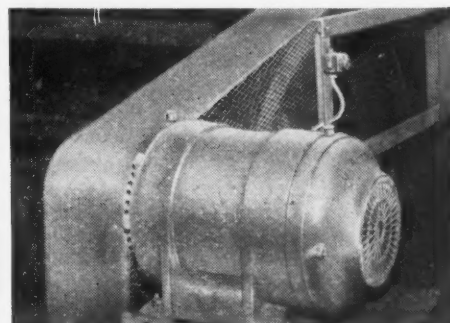
A 2334



TEXROPE DRIVES Gritty atmospheres do not harm Allis-Chalmers Texrope drives. Long-life duplex-sealed belt covers offer maximum resistance to abrasion . . . reduce the possibility of belt failure. Speed ratios 7:1. Mine pump installation shown above. Bulletin 20B6051G.



SOLIDS PUMP Solids-Handling pump was developed by Allis-Chalmers especially for coal . . . handles up to 40 percent solids in slurries, tailings, sludges. Has only five *easily removed* working parts — big parts inventory savings! 175 to 7,000 gpm; heads to 100 ft. Bulletin 08B6381B.

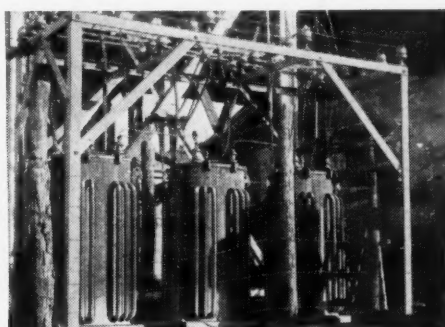


MOTORS Efficient, dependable power is delivered by 25 hp totally enclosed fan-cooled motor in a large coal preparation plant. This Allis-Chalmers motor has "sealed interior" protection against dirt, moisture and corrosion. Cooling air does not touch interior windings. Write for Bulletin 51B6144.



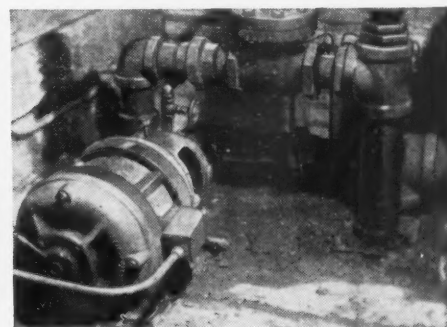
RIPL-FLO SCREENS

Reduce installation and maintenance expense with "Ripl-Flo" screens . . . used for screening egg, range, nut, stoker, and R.O.M. coal in lumps as large as 22 in. Sizes up to 6 x 16 ft. Bulletin 07B6151B.



POWER DISTRIBUTION

Transformers of Allis-Chalmers design meet the exacting requirements of mining service. Bank of three, shown above, steps down voltage for mine power equipment and auxiliaries. Send for Bulletin 01R6186.



CLOSE-COUPLED PUMPS

Motor and pump are combined into one unit in the SSUnit pump. Capacities 10-2,500 gpm; heads to 575 ft. Standard, enclosed fan-cooled, splash-proof or explosion-proof motors. Bulletin 52B6059D.

Low-Head, Texrope, Ripl-Flo, SSUnit are Allis-Chalmers Trademarks

Builds for Coal!



COST-PER-TON



HERE'S
WHAT THEY SAY
ABOUT SLOPE BELT OPERATION

"Success From The Start"

"Practically Trouble-Free Method"

"Saves In Man Power, Maintenance
And Actual Power Requirement"

"Original Estimated Belt Life
Already Doubled"

GOES DOWN—

when coal goes up on a Coal-Flo slope belt

SUCCESSFUL mine operators tell us one way to cut the steady rise in cost-per-ton is with a Goodyear Coal-Flo slope belt installation. For with a Coal-Flo on the job, there's continuous, uniform, automatic delivery at the tipple. You need no dumping crew—lose no time

spotting, switching and moving full or empty cars.

At the same time, your power demand is pegged at a uniform low level—no surges, peaks or valleys as with intermittent lifting—and with better voltage regulation.

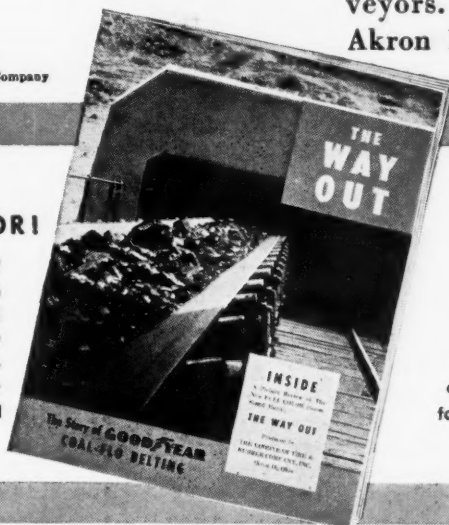
These are bed-rock facts —not claims

They're proved by years of experience in America's most progressive coal mines. Ask the G.T.M. — Goodyear Technical Man—for the dollars-and-cents story of many mines that have modernized their slope haulage with Goodyear Coal-Flo conveyors. Or write Goodyear, Akron 16, Ohio.

Coal-Flo—T.M. The Goodyear Tire & Rubber Company

SEE THE PROOF RIGHT IN YOUR OWN OFFICE—IN COLOR!

Ask to have a special showing of the film "THE WAY OUT," which covers the evolution of coal's transport from creel to conveyor. It shows you—in full color and sound—complete proof of the many savings you can make by conveyerizing your mine operation. Just call your nearest Goodyear Industrial Rubber Products Distributor to arrange a showing. His name is in your classified telephone directory.



FREE

Complete picture story
of savings with belt
conveyor system. Send
for free copy.

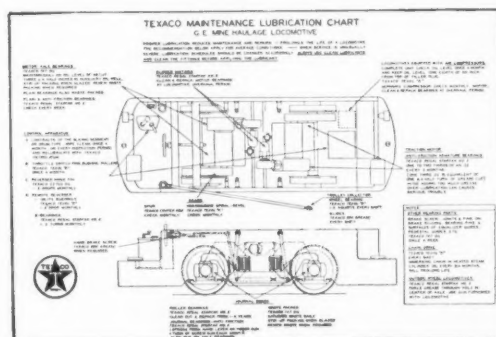
GOODYEAR

THE GREATEST NAME IN RUBBER





TEXACO MAINTENANCE LUBRICATION CHARTS: Leading manufacturers of underground coal mining machinery approve Texaco products for use on cutters, loaders, locomotives, etc., and have cooperated in preparing these charts. Charts show clearly where and when to use the proper Texaco lubricant. Order the charts you need by make and model of each machine.



Tune in . . .
TEXACO STAR THEATRE
every Wednesday night
starring Milton Berle.
See newspaper for
time and station.



TEXACO LUBRICANTS

Keep Production ROLLING

AND reduce costs, too, by lubricating anti-friction bearings with Texaco Regal Starfak No. 2

Protect grease-lubricated ball and roller bearings in locomotives and other mine machinery with *Texaco Regal Starfak No. 2* — the lubricant that's *really stable!* Even under the severest conditions, it fights off oxidation and gum formation...resists leakage, separation and wash out.

Four benefits are yours when you use *Texaco Regal Starfak No. 2*: 1) you reduce maintenance costs—properly protected bearings run trouble-free; 2) you get longer bearing life — spend less for replacements; 3) you save on lubrication costs — fewer applications are necessary; 4) you get increased production — machines stay on the

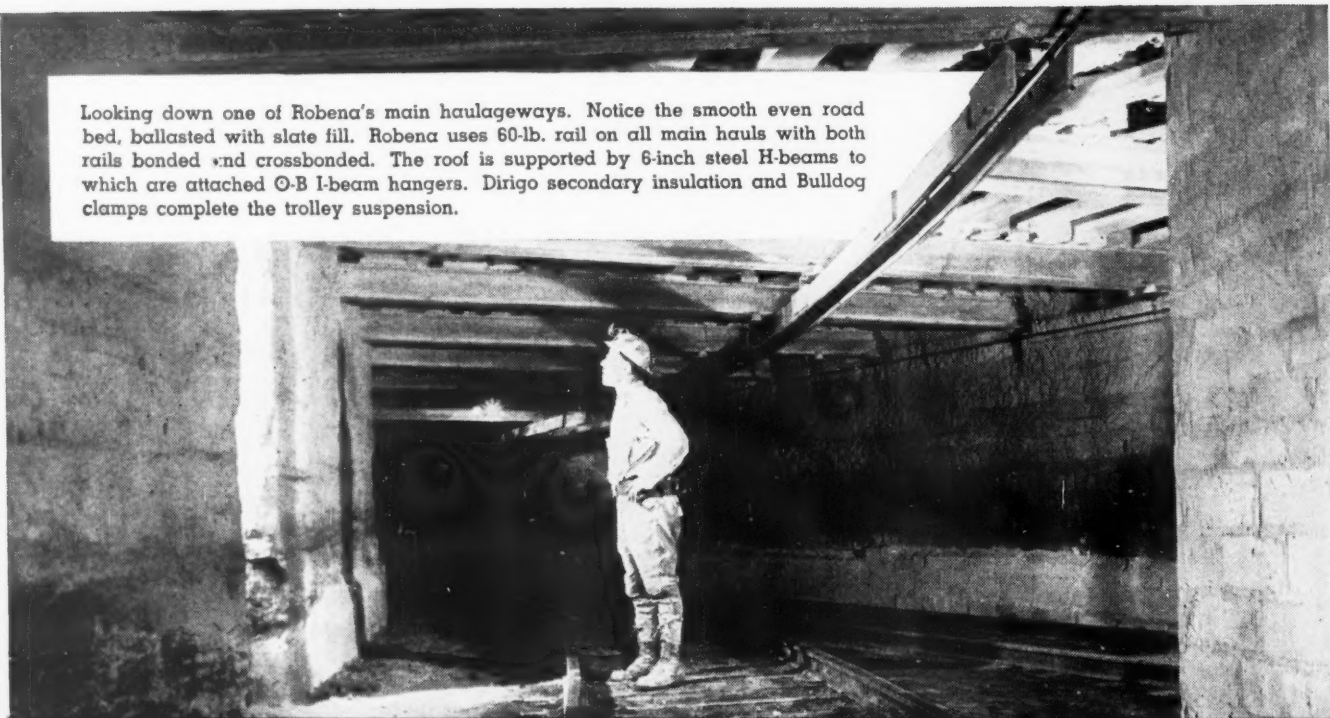
job, out of the repair shop.

In low-speed, heavy-duty anti-friction bearings, use *Texaco Marfak Heavy Duty*. You'll get long lasting protection and trouble-free performance even under the worst operating conditions.

Let a Texaco Lubrication Engineer help you increase the operating efficiency and economy of *all* your machinery. Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, *National Sales Division, Dept. C*, 135 East 42nd Street, New York 17, N. Y.

For the Coal Mining Industry

Looking down one of Robena's main haulageways. Notice the smooth even road bed, ballasted with slate fill. Robena uses 60-lb. rail on all main hauls with both rails bonded and crossbonded. The roof is supported by 6-inch steel H-beams to which are attached O-B I-beam hangers. Dirigo secondary insulation and Bulldog clamps complete the trolley suspension.

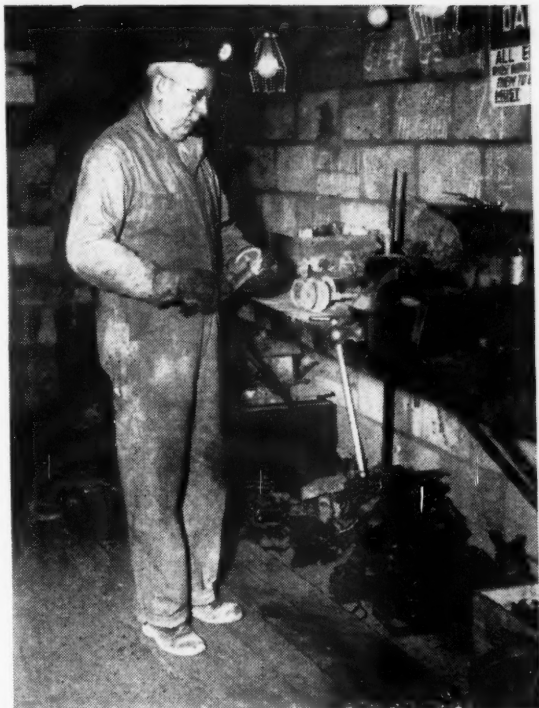


MODERN TROLLEY HAULAGE MOVES *50,000 Ton-Miles of Coal Daily* ... AT MAMMOTH ROBENA MINE

Eight-ton cable-reel trolley gathering motors bring the coal from the face loaders to section landings. Robena secondary haulage roads use 40-lb. track with the trolley supported from steel pipe driven into the rib. O-B horizontal adapters, Universal-2 hangers and Bulldog clamps hold the wire in place. Trolley is sectionalized into convenient lengths with O-B Metal Underrun Section Insulators.



Robena lays track right up to the face permitting the use of track-mounted drilling, cutting and loading machines.



Trolley wire at Robena is kept taut and free from encircling bumps. The trolley frog shown here is the O-B Type M, a smooth-underrun device.

Regular maintenance keeps Robena overhead in good condition. All reclaimed materials are thoroughly reconditioned before being put back into service.



● Modern trolley haulage is handling peak tonnages at Robena, famed mine of the H. C. Frick Coke Company, United States Steel Corporation subsidiary. Present haulage loads are in excess of 50,000 ton-miles daily. As Robena's output comes up to its expected capacity and haulage distances lengthen, this load will become still greater.

Because of its concentrated plan of mining and the enormous tonnages involved, Frick unhesitatingly turned to modern trolley haulage as providing the best answer to its transportation problems. The system it operates resembles a real underground "railroad". Nearly 275,000 feet of trolley wire are now installed with more being added every day. Powerful 30-ton tandem locomotives ply the main haulage roads, making a total of more than 60 round trips per day.

To make certain it gets the most from its haulage investment, Frick uses only the best materials obtainable. Long life is assured by careful and proper installation. Regular maintenance tells the rest of the story—a story that spells low-cost transportation efficiency.

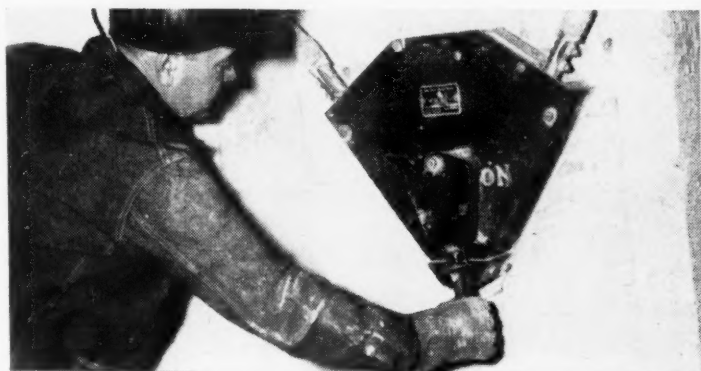
Trolley haulage can bring the same results to your mine. Just follow the practice of using *good* materials, *good* installation and *good* maintenance. Taken together, they add up to *good* mine transportation.

Ohio Brass

MANSFIELD, OHIO
CANADIAN OHIO BRASS CO., LTD., NIAGARA FALLS, ONT.



2820-M

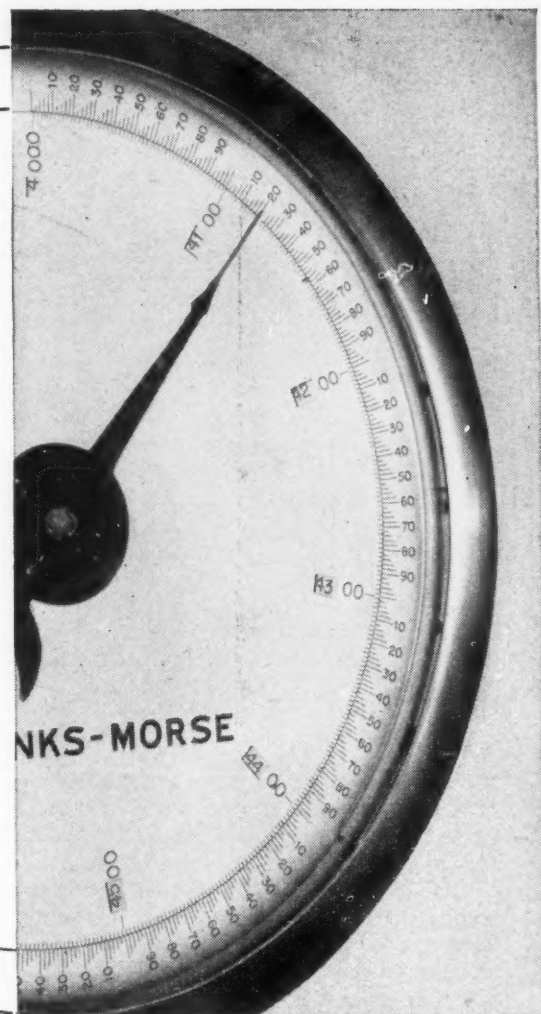


O-B Safety Feeder Switches provide a safe means of breaking feeder circuits at all sectionalizing points.

To provide take-up in its telephone cables, Robena introduces a counterbalancing weight every 500 feet as shown in the construction above. This practice avoids breakage of the cable in case of roof falls.



*.. by Guess
and by Gosh or..*



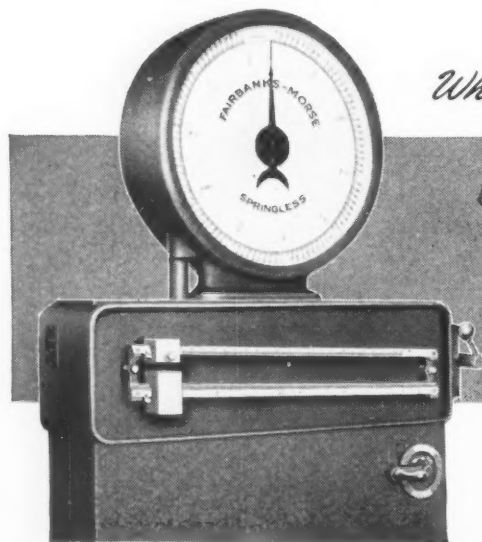
Naturally in coal mining, there's no place for "by guess and by gosh" . . . no guesswork on weights . . . if profit losses are to be eliminated and misunderstandings over weights avoided.

But, even though your scale may be accurate, is guesswork eliminated? Does the chance for human error exist . . . for inaccurate readings?

From many accurate scales in service today, there is still chance for human error . . . for plus and minus mistakes to affect profit and employee relations.

In selecting scales for true accuracy, choose the weighing instruments that are designed for quick, easy reading. All Fairbanks-Morse dial scales have the unique feature of the direct reading dial. Weights are read at the point of the indicator in all capacities, eliminating mental calculations and the chance for human error.

Why not have a Fairbanks-Morse weighing expert demonstrate how Fairbanks-Morse scales can help you? Fairbanks, Morse & Co., Chicago 5, Ill.



When it comes to scales...



FAIRBANKS-MORSE

A name worth remembering

DIESEL LOCOMOTIVES • DIESEL ENGINES • STOKERS • SCALES • MOTORS • GENERATORS
PUMPS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS

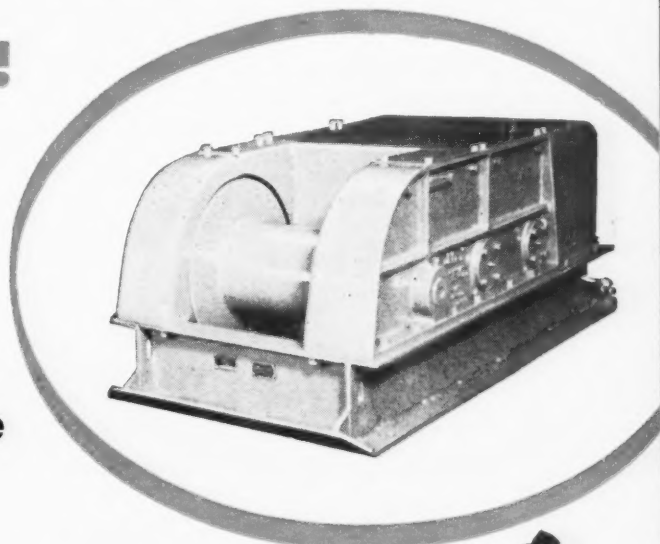


JOY CAR PULLERS

pull your costs down, too!

Much more economical than using a mine locomotive for spotting, pulling a trip past a loading point, or other heavy-duty pulling jobs, the JOY Car Puller is a compact, powerful, precisely-controlled unit. Equipped with automatic motor-shaft brakes to hold cars on grades when motor is not running, and with anti-backlash brakes to prevent over-spinning. All-steel construction, with all parts enclosed, means long life and almost negligible maintenance costs. *Write for Bulletin.*

**Designed for Heavy Duty—Long Life
—Low Maintenance**



Consult a Joy Engineer

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY-SULLIVAN OF CANADA, LIMITED, GALT, ONTARIO



New life for oil-lubricated loaderwi



STANDARD OIL COMPANY (INDIANA) STA

erwith...

SUPERLA Mine Lubricant No. 0

New Superla Mine Lubricant No. 0 has fast established itself in Midwest mines as a superior lubricant for oil-lubricated loaders and cutters. In one 6-month test on a Goodman No. 360 loader, Superla Mine Lubricant No. 0 kept gears and clutch plates unusually free from hard carbon and other deposits. It maintained smooth, efficient loader action, contributing to high machine production.

Results obtained with this additive-type oil show five benefits of improved loader lubrication:

Less down time and maintenance. Superla Mine Lubricant No. 0 contains an oxidation inhibitor that reduces oil deterioration at high gear-case temperatures. A detergent additive keeps gear-case contaminants from settling out on clutch plates, gears and gear cases. Cleaner operation reduces wear on machine parts and down time for replacements.

No over-heating. Superla Mine Lubricant No. 0 does not thin out excessively at operating temperatures. This quality assures proper lubrication of machine parts during long periods of continuous service.

Faster loading. Clean clutch plates permit smooth operation of controls. This allows easier handling of the machine, results in faster loading, and reduces operator fatigue.

No warm-up time. Superla Mine Lubricant No. 0 is fluid at low temperatures. When the machine starts, controls operate freely. Wear is reduced because the lubricant flows readily to bearings, gears, and clutches.

Low consumption. Superla Mine Lubricant No. 0 is a closely fractionated oil. In actual mine-loader tests, consumption has been as low as 25% of that obtained with conventional motor oil.

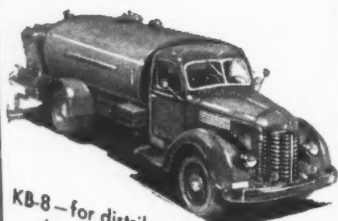
A test of new Superla Mine Lubricants in your equipment will prove their many advantages. Grades are available for both grease- and oil-lubricated cutters and loaders. The Standard Oil Lubrication Engineer in your Midwest locality will help you make a test. Write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

NA) STANDARD OIL COMPANY (INDIANA)

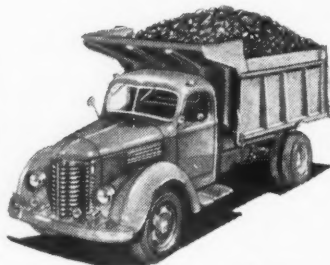


SPECIALISTS

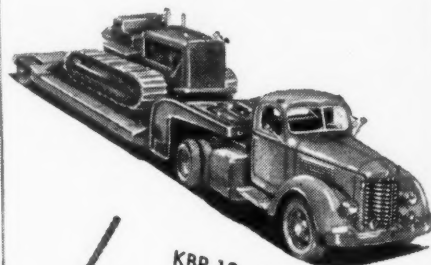
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KB-8—for distribution of bituminous material

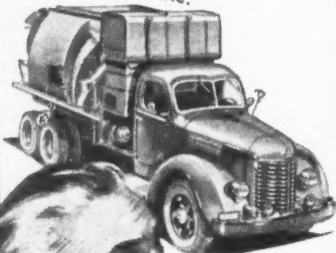



KBR-11—for transport of coal.

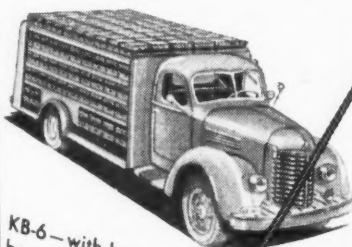


KBR-12—Truck-Tractor—for hauling heavy machinery.

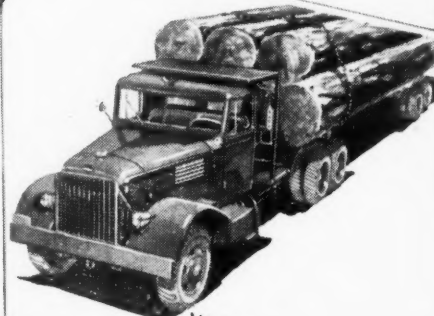
KB-8-F—for mixing and transporting concrete.



THIS EMBLEM  IDENTIFIES GREAT TRUCKS



KB-6—with low frame for beverage delivery.



W-6564-OH—Truck-Tractor for heavy log transport.



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... And the final test comes in actual operation underground. Here you see a Jeffrey 35-B SHORTWALL Cutter making a cut across the face with cutter bar fully sumped. For a better job and greater economy use a Jeffrey 35-B cutting machine.

397-45

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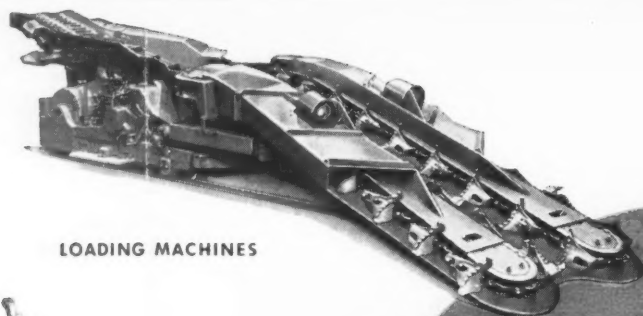
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Sales Office

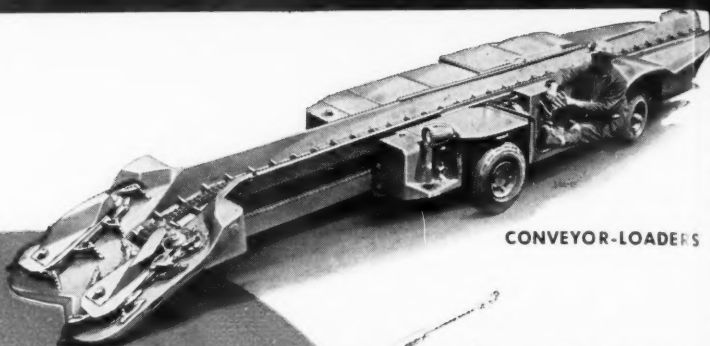
Service Station

Foreign Plant

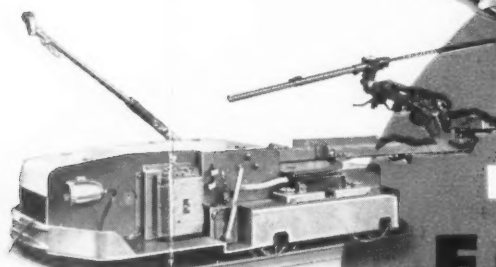
RTWALL
TTERS



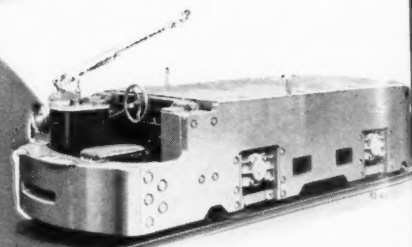
LOADING MACHINES



CONVEYOR-LOADERS

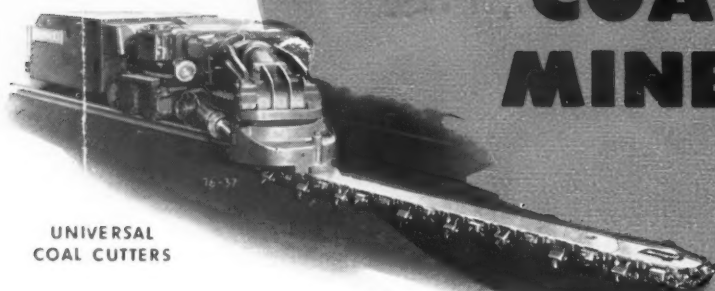


DRILLS AND
DRILLING MACHINES

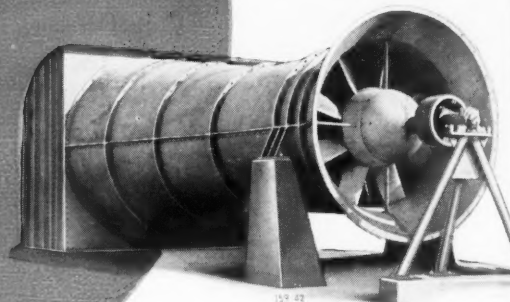


TROLLEY AND STORAGE
BATTERY LOCOMOTIVES

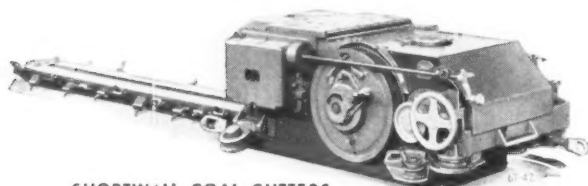
JEFFREY EQUIPMENT FOR COAL MINES



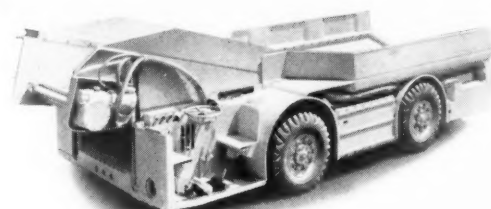
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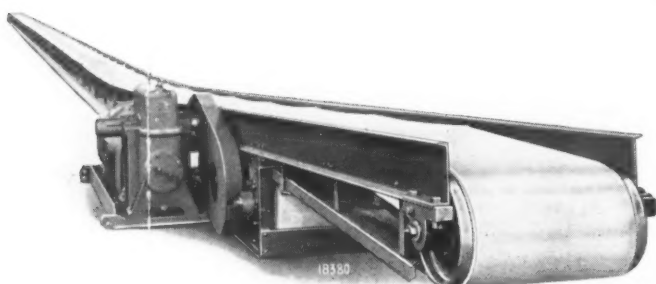
FANS AND BLOWERS



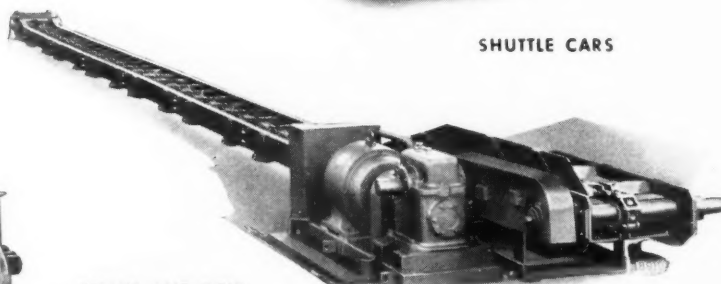
SHORTWALL COAL CUTTERS



SHUTTLE CARS



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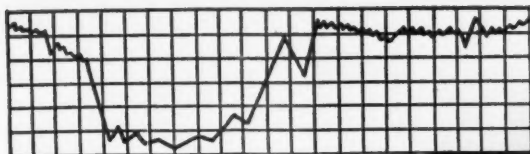
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keeps them
CHARGED



SIX OR SEVEN hours of charging per day during the off-peak period . . . that's normally time enough for full recharge of the batteries that operate your mine haulage equipment—*provided they are EDISON Nickel-Iron-Alkaline Batteries.* The reason: EDISON Batteries can be charged day after day at an average of their normal rate without injury.

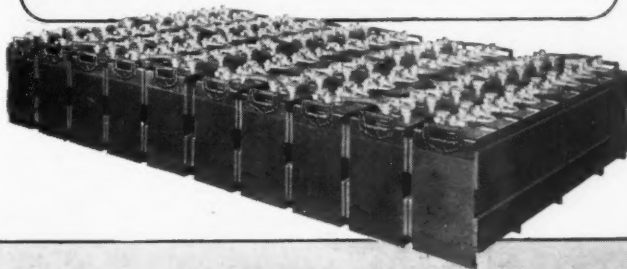
In addition, they require no critical adjustment of the charge rates. That means that you can charge them directly from the d-c power lines through suitable resistors.

EDISON Nickel-Iron-Alkaline Batteries have many other built-in advantages: their rugged steel construction inside and out withstands rough usage; their electrolyte, an alkaline solution, is a natural preservative of steel; their electrochemical principle of operation is free from self-destructive reactions. That's why they stay on the job, out of the repair shop. That's why they cut annual operating cost and give longer service life than any other type of battery.

Specify EDISON and you specify maximum reliability—enduring quality.

*In Mine Locomotives and Shuttle Cars EDISON
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- ★ They are **durable mechanically**; grids, containers and other structural parts of the cells are of steel; the alkaline electrolyte is a preservative of steel.
- ★ They are **foolproof electrically**; are not injured by short-circuiting, reverse charging or similar accidents; are free from self-deteriorating reactions.
- ★ They can be **charged rapidly**; do not require critical adjustment of charge rates; can be charged directly from mine d-c supply.
- ★ They **withstand temperature extremes**; are free from freezing hazard; are easily ventilated for rapid cooling.
- ★ They can **stand idle indefinitely** without injury, without attention, and without expense.
- ★ They are **simple and easy to maintain.**



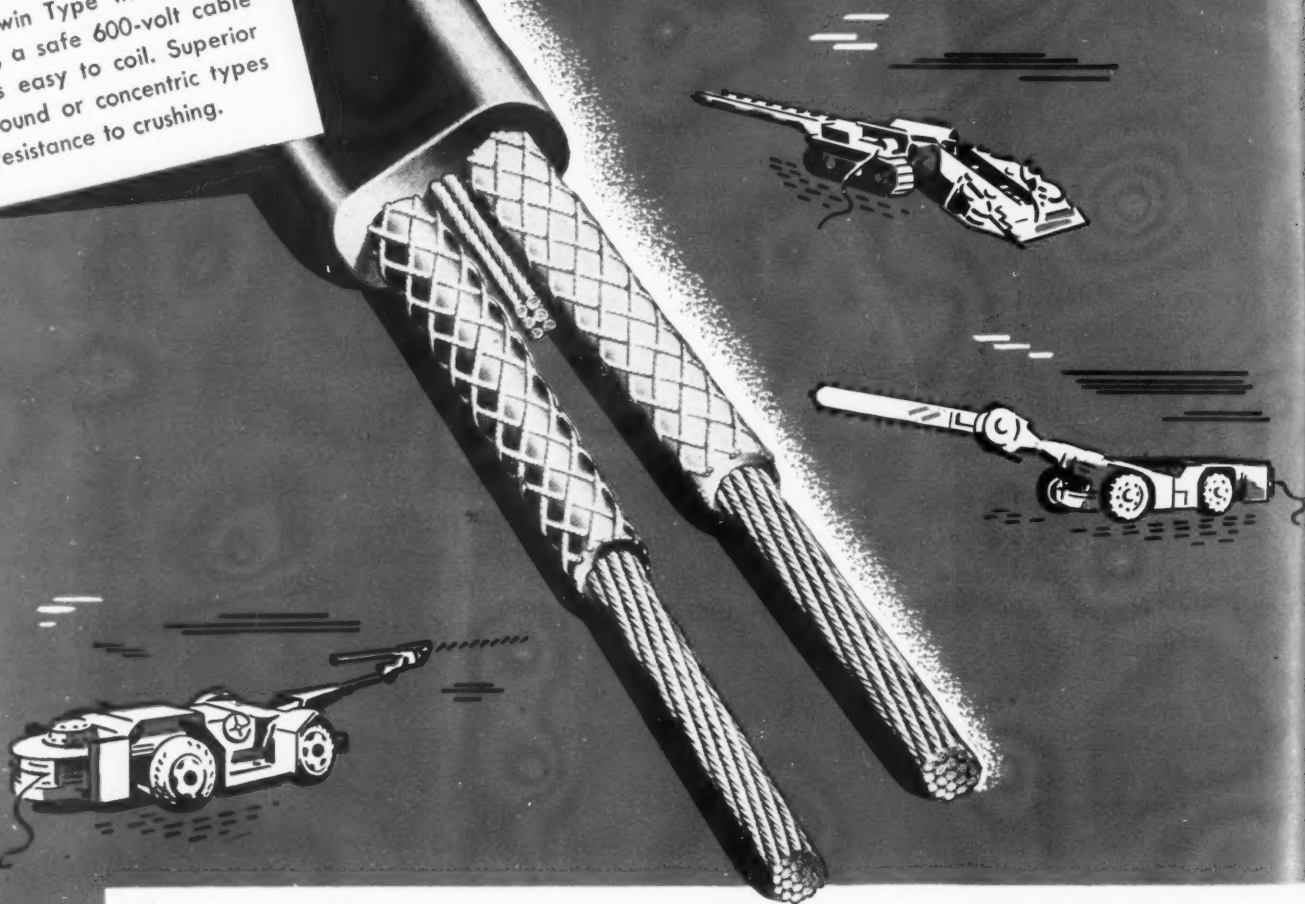
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CUT THE SIZE with GEOPRENE

Flat Twin Type with ground wires, a safe 600-volt cable that's easy to coil. Superior to round or concentric types in resistance to crushing.



You can get G-E insulated cable for every mine application. The following types are a few of a wide range of available standard constructions.



Type SH-D, up to 15,000 volts Recommended as first choice for all high-voltage circuits requiring portable cable. Bulletin GEA-4229.



Minepower Cable, 5000 volts Super Coronol insulation plus Geoprene jacket give exceptional resistance to ozone, heat, and aging. Light in weight, easy to splice. Bulletin GEA-4708.

and CUT THE COST PORTABLE CABLE

First cost is less when you buy Geoprene portable cable—as much as 19% less—because you get bigger-cable power together with smaller-cable economy. For Geoprene* jackets, with their superior heat resistance, make possible the use of insulation with an increase in rating from the normal 60 C to 75 C. This rise in continuous copper temperature permits a substantial reduction in cable size for the same current carrying capacity, saves material, brings down the cost.

Lighter—handles easier

Savings continue while you use Geoprene portable cable. Its smaller size, lighter weight, and greater flexibility make it easier to handle than bulky 60 C cable. You can wind more cable on each reel, or use smaller reels where space-saving is important.

Tougher—lasts longer

Your maintenance and replacement costs are brought down because the Geoprene jacket is extra tough (2½ times tougher than natural rubber in

standard tear tests), stands up in use under abrasive and abusive conditions, strongly resists wear and cutting. It beats natural rubber also in resistance to sunlight, oil, alkalis, and acids. And its flame resistance has been approved by the Pennsylvania Department of Mines.

Flat twin type resists crushing better

In the flat twin construction shown, the shape permits easier coiling on take-up reels, plus better resistance to crushing when run over than round or concentric type portable cables. To meet safety requirements when used on tire-mounted coal-cutters and loaders, the ground wires provided have ample carrying capacity for ground-fault current.

Summing up, you get double value—longer life at a lower price—with Geoprene flat twin portable cable. Sizes are from #6 to #1 AWG, for operation at 600 volts. Ask your nearest G-E representative for further details or write for Bulletin GEA-4229. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*



Single-Conductor, 600 volts Primarily for cable reels of gathering locomotives. Steel wires stranded in conductors of smaller sizes add tensile strength. Bulletin GEA-4229.

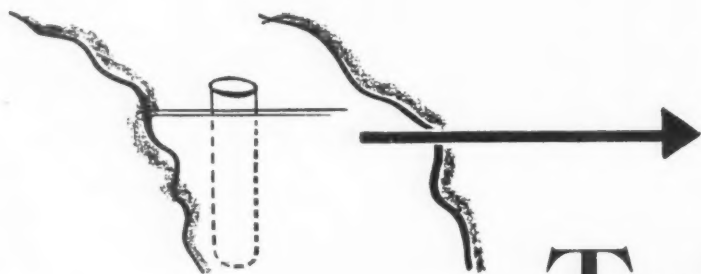


Mine-Telephone Cable Insulated with Flamenol; reduces interference and cross-talk to minimum. Can be buried directly. Bulletin GEA-3612.

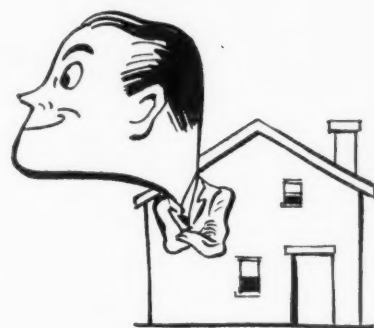
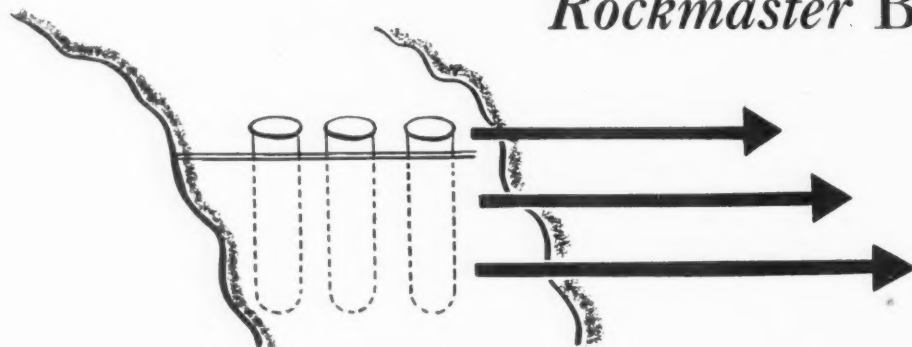
*Geoprene—special G-E compound containing approximately 60 per cent neoprene, with the balance consisting of plasticizers, accelerators, and reinforcing agents.

GENERAL  ELECTRIC

Yesterday... by Ordinary Blasting Methods



Today ... by the *Rockmaster* Blasting System



**“We shot over three times as many holes
and received no complaints!”**

A big limestone quarry received so many complaints about noise and vibration that they were forced to cut way down on the number of holes they could fire by standard methods. Costs per ton of rock went soaring.

Then they called in Rockmaster—and quickly found that with the Rockmaster system they could fire over three times as many holes with approximately four times as much dynamite without receiving complaints. And this is not an isolated case, by any means.

This fact alone is important to quarries, construction jobs and coal stripping operations, but there is more to it than the mere silencing of complaints. The Rockmaster system gives better fragmentation, far less “back-break” in quarries and less pulverizing of coal in strip pits. It frequently happens that the Rockmaster system permits a wider spacing of drill holes with a saving of drilling and explosives cost, too.

Call in the Atlas representative today. He will be glad to give you the benefit of Atlas pioneering in milli-second delay blasting.

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YOU THE GREATER
SAFETY OF MANASITE
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*Less Bark ...
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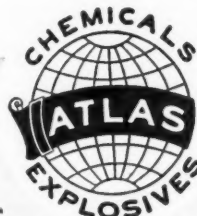


“ROCKMASTER”—Trade Mark
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ATLAS

EXPLOSIVES

“Everything for Blasting”



ATLAS POWDER COMPANY, Wilmington 99, Del. • Offices in principal cities • Cable Address—Atpowco

See how easy they are to install



Here's a Bethlehem No. 5 Mine Tie about to be slipped into place beneath the track. That stationary clip (left) will be pulled snug against the outer flange of the rail. The same thing will be done at the other end, where a similar clip fits against the right-hand rail. Then those rotating clips—two at each end—can be tapped around with a hammer till they hug the inner flanges.

There's your tie, completely installed. Simple, isn't it? Quick, too!

But that's not the only good feature of Bethlehem's No. 5. It's a strong, husky tie. Weighs 5 lb per ft of section; has channel construction to give added support down the middle. The No. 5 has adequate strength to handle today's heaviest loads in mechanized mining.

Bethlehem makes a full line of steel mine ties, ranging from light to heavy. Many, many thousands of the lighter ties are sold each year, but frankly, we

usually recommend the No. 5 where king-size motors, cutters, loaders, and cars run over the track. Though it is slightly higher in first cost, its longer life will usually more than offset the difference.

Ask a Bethlehem man for facts and figures.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

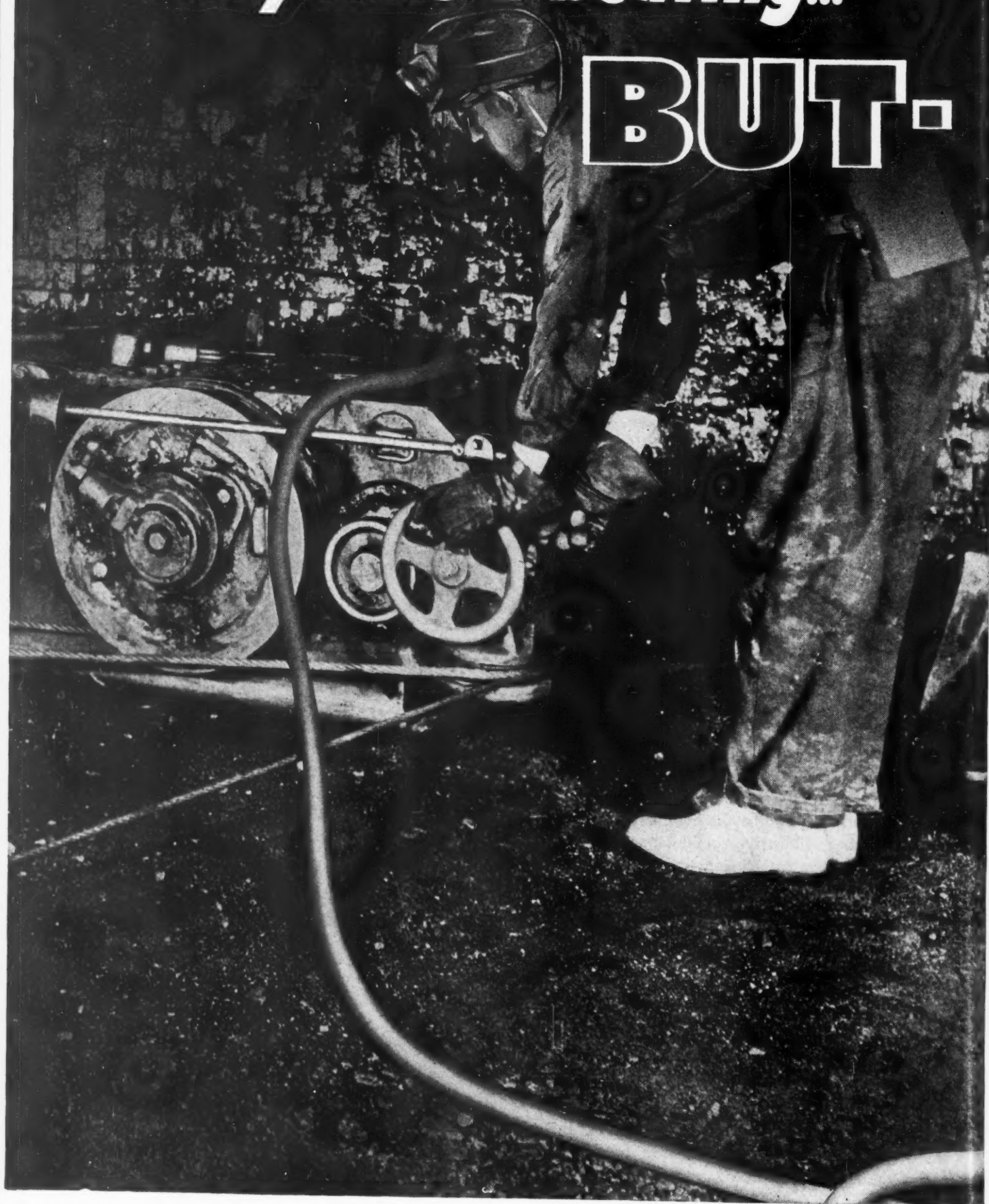
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THEY'RE BUILT TO TAKE IT . . . you can treat them rough, but you can't beat Roebling Roeprene Mining Machine Cables for long, trusty, dollar-saving service. Insulated with a high grade rubber compound, their outer jackets are Roeprene, lead-mold cured for extreme density and high resistance to abrasion.

Roebling Roeprene Mining Machine Cables with conductors of rope-laid, tinned copper strands are approved by the Pennsylvania State Bureau of Mines (Approval P-111).

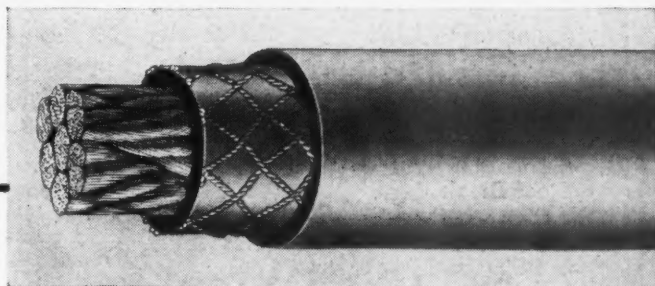
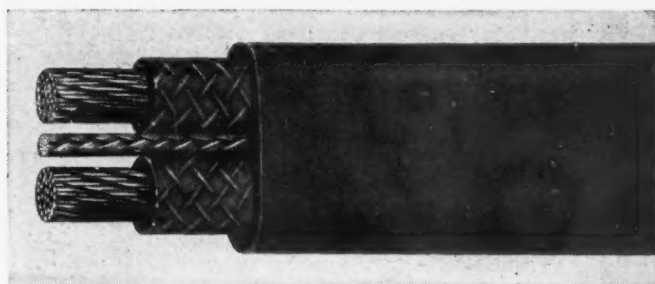
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machines. They are tough as a tire—practically oblivious to light cuts, water, oils and ozone.

Whatever your needs, there's a Roebling power cable of the *right* type and size—and engineered *right*—for every job. Your nearby Roebling distributor will be glad to help you choose the ones best adapted for specific applications. Write or call him.



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FLAT WIRE, COLD ROLLED STRIP AND
COLD ROLLED SPRING STEEL ★ SCREEN, HARDWARE
AND INDUSTRIAL WIRE CLOTH ★ LAWN MOWERS

ROEBLING

A CENTURY OF CONFIDENCE



MAXIMUM RECOVERY AT LOW COST WITH ONLY TWO ROOMS PER PANEL

Goodman Duckbill-Shaker Conveyors provide a completely mechanical loading and gathering system

A few years ago a prominent Kentucky operation was faced with the necessity of obtaining maximum seam recovery while reducing costs. This was accomplished by mechanizing with Goodman Shaking Conveyors, equipped with Duckbills.

Seam Conditions

A clean, 50" seam is mined with the overburden varying from zero to 600 feet. The immediate top is fairly strong slate but is weak above this. The seam in general is flat and free of rolls.

Method Chosen

To obtain maximum recovery at the lowest cost, a thorough study of mining methods and equipment was made. It was decided to use a 2-working room panel with the shaker conveyors equipped with Duckbills for loading and Goodman Type 512 Shortwalls equipped with Bugdusters for cutting. Gathering from both rooms was to be done by a gathering shaker conveyor. All told twenty-seven Type G-20 Shaker Conveyor units have been installed. The result has been low cost operation with a total of seam recovery in excess of 80 percent.

Two-Working Room Panel

Because the roof is weak, more than one wide working room on each side of the panel cannot be kept open. To keep more than one working room open would have required driving the room up narrow and pulling the thick pillar after the room was driven to depth, if satisfactory extraction was to be obtained. The low equipment and labor cost of shaker conveyors equipped with Duckbills permits the economical mining of a 2-working room panel, thus eliminating the expense of pulling pillars and maintaining a break-line under the varying roof weight.

Roof Break

Under the present method of driving 28-foot rooms on 36-foot centers a major roof break occurs after 6 to 8 rooms have been recovered from a new panel. This break caves all but the working room and the worked out preceding room on each side of the panel. Thereafter the working room and the adjacent worked-out room can be kept open safely. (See Fig. A)

Duckbill Loading

In considering Duckbill versus mobile loading, it was found that the equipment and labor cost per ton for mobile loading would be excessive with only two opposing rooms per working section. The 2-ton mine cars

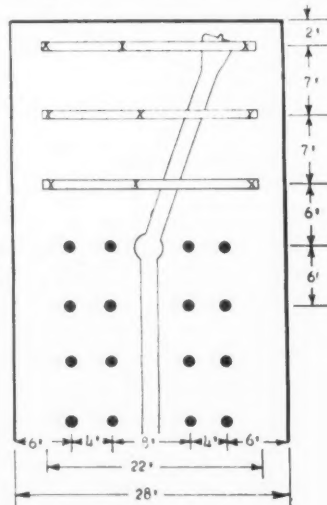


Figure A

would not have been economical for mobile loading. The tail end of a belt conveyor would have been a liability under caving roof. Additional mechanical force and facilities would necessarily have been required.

Entry System

The seam outcropping in the valleys causes the mine areas to be quite irregular in shape and size. Triple panel entries are turned off the triple main entries to best suit the shape of the acreage to be recovered. All entries are driven by Type G-20 Shaker Conveyors and Duckbills. The mains are protected by 300-foot barrier pillars which are recovered on retreat by driving 280-foot rooms, 28 feet wide on 36 foot centers. Break-throughs on the main are planned for this recovery as the entry is driven.

Room Panel Projection—Figure 1

Rooms are turned off the triple panel entry on 36-foot centers. Rooms are opened off the outside entries at 20-foot width in heavy top and full 28-foot width under normal top con-

ditions. Rooms are driven to 280-foot depth. The G-20 Shaker Conveyor drive for each room is set in the break-through between the center and outer entries. Break-throughs 12 feet wide are aligned on 36-foot centers opposite each room neck. All entries are driven on 25-foot centers, the center entry being 15 feet wide and the outside entries 18 feet wide. More than 80 percent total recovery is being obtained by this mining method.

Conveyors

The room shaker conveyors, equipped with Size 3 troughing, discharge at a common point in the center entry onto the Type G-20 Gathering Shaker Conveyors, which discharges directly into the mine car trip.

Room Recovery

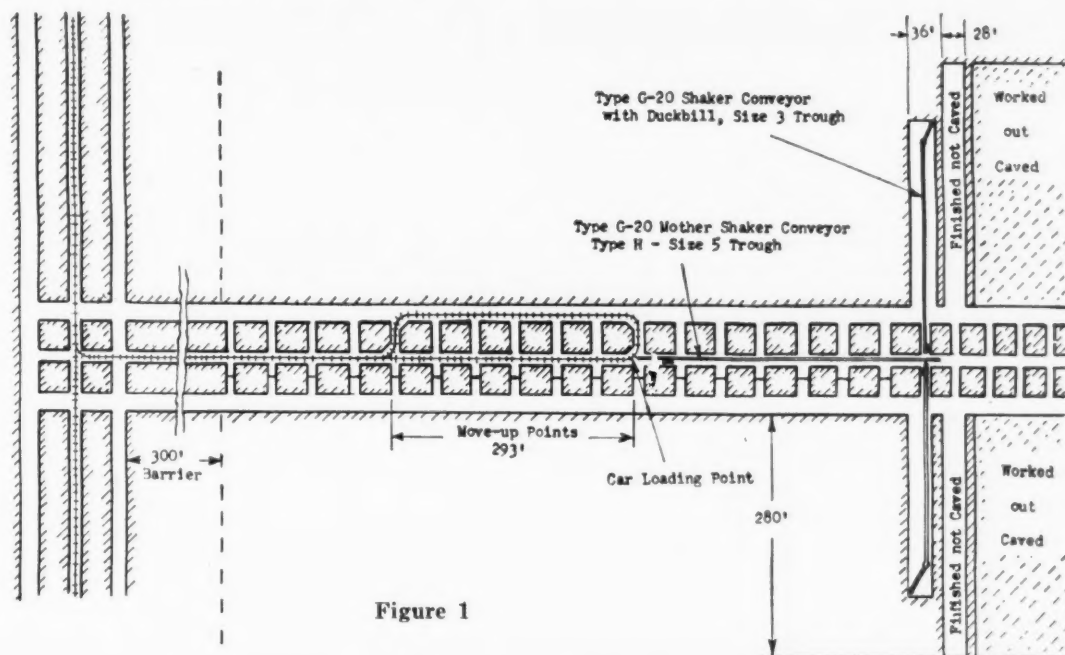
Room recovery is on the retreat from the top of the panel entry to the main entry barrier. The gathering conveyor is 293 feet long. Thus eight rooms on each side are recovered from each gathering conveyor setup. It is shortened by removing the required number of 13-foot troughs as each two opposing rooms are finished. Thus, there is no idle conveyor footage under heavy top in the worked-out entry.

Crew

The move-up of the gathering conveyor and the two room conveyors require 2 shifts for the 10-man crew and 2 trackmen. It takes a 4-man face crew 4 to 6 hours to move each room conveyor completely, including all troughing and the duckbill, from a finished room to the adjacent room, and set up ready to run coal.

The installation presented here is an authentic case history. It is one of many instances where the Duckbill-Shaker Conveyor system of mining has provided the profitable answer to a specific problem. The best way for you to determine the value of Goodman Duckbill-Shaker Conveyors in your mine is to call in a Goodman sales engineer. Without obligation, he will survey your workings and show you where and how this combined loading and transporting system can be installed, and estimate the production capacity you can expect.

GOODMAN MANUFACTURING COMPANY



17480

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In England UNITED STEEL COMPANIES, LTD.



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Governor

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The Columbia River is the greatest single source of electrical power in the world. With low-cost power, our wealth of natural resources, and our maritime trade with Alaska and the Orient we are establishing a regional economy unrivalled in the nation.

Enterprising business men will find here new and exciting industrial opportunities. These include processing of raw materials, fabrication of new products, diversified trades to service a growing city and farm population.

Washington State is a good place in which to live, to work, to do business and to prosper.

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* One of a series of advertisements based on industrial opportunities in the states served by Union Pacific Railroad.

Unite with Union Pacific in selecting sites and seeking new markets in California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, Oregon, Utah, Washington, Wyoming.

*Address Industrial Department, Union Pacific Railroad
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UNION PACIFIC RAILROAD *Road of the Daily Streamliners*

30

October, 1948 • COAL AGE

Here is **WHY** the

CONCAVE SIDE

(U. S. PATENT NO. 1813698)

SAVES You Many DOLLARS In V-BELT Costs!

Every time a V-Belt bends around its pulley, the *top* of the belt is under *tension* and grows *narrower*. The *body* of the belt is *compressed*—causing the *sides* to *bulge out*!



FIG. 1

Because of these stresses, any V-Belt built with straight sides is forced to assume, in the sheave groove, the shape shown in figure 1, on the left.

This forced bulging of a straight-sided V-Belt against the sheave groove walls naturally produces excessive wear along the *middle* of the belt's sides—as indicated by the arrows. Also, because the full side of the belt does not *uniformly* grip the pulley, there is a definite loss in drive efficiency.

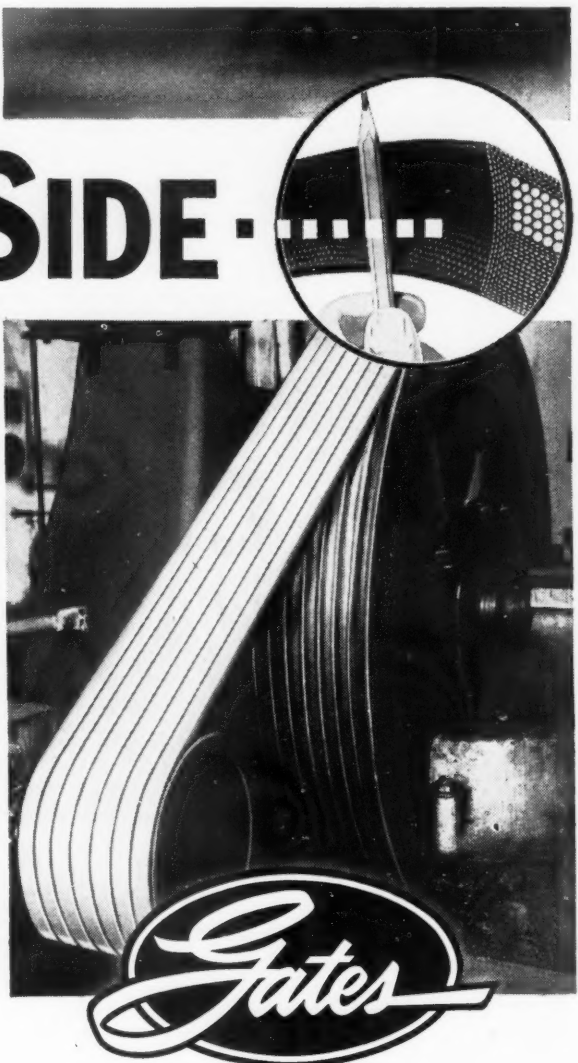
Now see the difference when you bend the V-Belt that is built with the precisely engineered Concave Side (U. S. Patent No. 1813698)—the Gates Vulco Rope.



FIG. 2

As the Gates Vulco Rope bends, its Concave Side becomes straight (Figure 2). It exactly fits the sheave groove—and this gives you two very definite savings:—

- (1) No out-bulge of the sides means uniform side-wall wear—*longer life*!
- (2) Full side-width grip on the pulley carries heavier loads and sudden load increases without slippage—saving your belts and saving power too!



REG. U. S. PAT. OFF.
The Mark of **SPECIALIZED** Research

The Concave Side is MORE IMPORTANT NOW Than Ever Before!

Because the *sides* of a V-Belt are what actually *drive* the pulley, it is clear that any increased load on the belt means a heavier load that must be transmitted to the pulley *directly* through the belt's sidewalls.

Now that Gates **SPECIALIZED** Research has made available to you **SUPER** Vulco Ropes—carrying fully 40% higher horsepower ratings—the life-prolonging Concave Side naturally delivers greater savings today than ever before.

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DENVER, U.S.A.
"The World's Largest Makers of V-Belts"

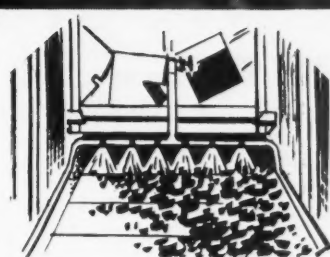
Your Coal Is Better THAN IT IS CRACKED UP TO BE

Once the detonation of explosives has introduced shatter-cracks into coal, little can be done to decrease progressively costly degradation.

CARDOX limits degradation at the working face where it begins. The gentle, heaving action of CARDOX breaks the face along its natural lines of cleavage. The coal is firm, solid, and remarkably free from the minute shatter-cracks that cause rapid degradation at every preparation and handling operation.

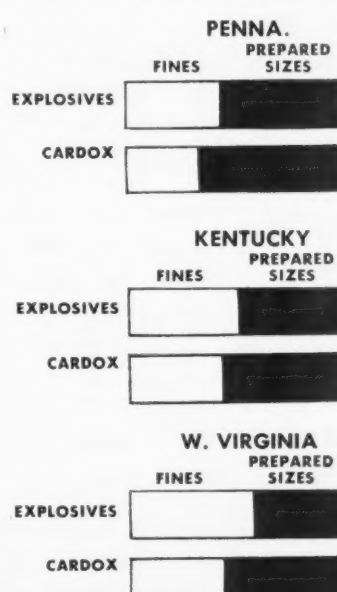
Because CARDOX-mined coal retains its inherently firm structure it does not crumble even though sub-

jected to extensive mechanical handling. For this reason it is more economical to clean, and retains its premium size through long shipments by train, boat, or truck. Write for full details on free demonstration.



Because CARDOX-mined coal has no shatter-cracks, it does not crumble when subjected to extensive cleaning and mechanical handling.

Typical Realization Increases when CARDOX replaces explosives.



CARDOX

"THE NON-EXPLOSIVE MINING METHOD"

CARDOX CORPORATION

BELL BUILDING • CHICAGO 1, ILLINOIS

COAL AGE • October, 1948

You can go anywhere—reach anywhere —work faster with the



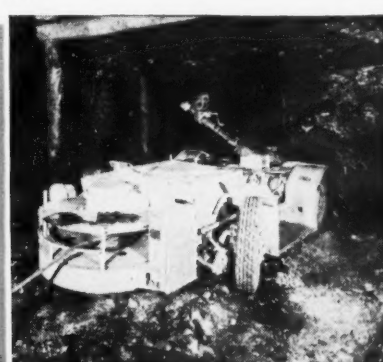
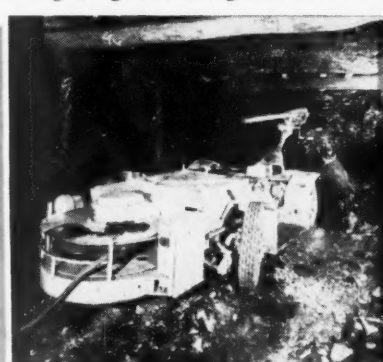
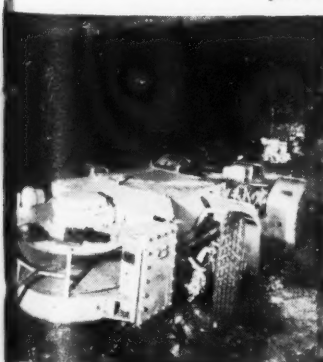
JOY CD-22 COAL DRILL

The high-speed CD-22 one-man Coal Drill, only 30" high, is designed for easy maneuvering in thin seams or under low timbers. Trackless and self-propelled, the CD-22 will keep ahead of any loading machine. The exclusive JOY pre-selector feed and speed control permits exact settings of rotation and advance that are best suited to individual conditions. All operations are hydraulically controlled, eliminating complicated transmissions and differential gears. The CD-25 is another mobile drill for high-speed drilling . . . write for bulletin on these efficient units.

This Unit can reduce your Costs! Drills High or Low Seams!

The CD-22 can drill holes up to 9 feet deep, anywhere in the face from 6 inches to 5½ feet above the floor. With a special long boom, it can drill holes 7 feet from the floor. The drill boom is easily positioned to drill at any angle. The high mobility of the unit makes hard-to-reach spots readily accessible, resulting in great savings in time and manpower.

Left, the CD-22 drilling only 6" above floor; center, drilling the face at an angle; right, reaching out to drill a corner.



*Consult a
Joy Engineer*

W&D CL 2048

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING • PITTSBURGH 22, PA.

IN CANADA: JOY-SULLIVAN OF CANADA, LIMITED, GALT, ONTARIO

